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Full Length Research Paper

Impacts of rapid urbanisation in the urban fringe of Lokoja, Nigeria

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Urban settlements in many parts of the world have been experiencing rapid growth in recent decades with serious consequences on the environment of the fringe areas. This paper examined the opportunities and challenges of rapid urbanisation of Lokoja on the environment of the urban fringe. It utilised data generated from questionnaire administration from the fringe areas and Google images of Lokoja to examine the following specific issues; the incidence of growth, motivation of responses of fringe dwellers to urban expansion, the impacts of the growth on the physical and residential environment, and urban management interventions to the growth. It was observed that settlements in the fringe expanded from 3 to 83% between 2000 and 2016 without commensurate provision of social infrastructure. This growth has generated uncontrolled physical development within the flood plains, and the conversion of forest and agricultural land at the periphery of Lokoja for settlements. Though the expansion has served to provide accommodation and means of income for the residents, the situation has exacerbated negative externalities in form of risk to health and life, and physical hazards related to the occupation of unsuitable sites, lack of access to potable water and basic sanitation and poor housing conditions. The paper therefore made recommendations for the preparation and implementation of integrated development plan for the Metropolis and the restructuring of the administrative and management systems for the urban region to balance conflicting interests for effective control.

Key words: Urban fringe, rapid urbanisation, land use, development control, planning.

INTRODUCTION

Urbanisation is an important process of economic, social and physical change in developing countries such as those in Sub-Saharan Africa (Rakodi, 1997; UNCHS, 2001). African modern cities have experienced excessive growth not only in population but in spatial dimensions. According to Hall and Pfeiffer (2000), urban population in

Africa is expected to double by 2025. The projected growth rates of urban agglomeration in Western Africa, and Nigeria in particular, will be amongst the highest in the World. Inherent in this growth is the expectation that cities are vital and, in fact, indispensable to the development of any nation. Thus, to develop and

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continue to prosper, nations must have not only cities, but enough of them. This sentiment was expressed by Jacobs who opined that, "nations are strictly the economic creatures of their cities, becoming wealthy as their cities become productive and numerous, subsidising into poverty as cities lose economic vitality" (Jacobs, 1984, front flap).

Generally, Nigerian towns and cities are noted to be growing very rapidly. National average urban growth rate is about 10% per annum (Sada and Oguntoyinbo, 1981; Adedeji and Rowland, 1973). The Nigerian cities are growing faster than their European counterparts did at the peak of their growth (NITP, 2014). Rapid urban growth means an increasing demand for land for housing and other urban uses. In many countries, particularly, in Africa, this growth finds expression in outward expansion of the built-up area unto land in the urban fringe (Aguilar, 2008; Adesina, 2007; Tacoli, 1999 and 1998). According to Ruhiga (2013), Adesina (2007) and Yankson and Gough (1999), land at the urban fringe is often converted to urban use without any systematic development plan. As a result, the fringes are associated with unplanned and uncontrolled development, and occupation of unsuitable sites, lacking in access to clean water and basic sanitation, and poor housing conditions. This poses serious social, economic and physical or environmental problems whose implications for effective urban management in Nigeria do not seem to be adequately taken care of. This fact has led many to question the sustainability of the current trend in urban growth considering the accompanying challenges such as slum development, environmental degradation and large scale modification of the environment of the urban fringe (Duany et al., 2000; Yankson, 1995; Songsore and McGranahan, 1993; Onibokun, 2004). Nevertheless, the fringe provides opportunities for livelihoods of a diversity of population including lower income groups and migrants who as a result of urban extension are exposed to urban influences. Consequently, researches at the urban fringes are arguably potent and contemporary issues to understanding the processes of urbanisation in developing countries (Adesina, 2007; Thuo, 2013).

According to Njoh (2003) and Macionis and Parrillo (2010), rapid urbanisation is always accompanied by numerous challenges as well as opportunities everywhere in Nigeria. While it creates job opportunities and markets for rural producers, it fuels rural-urban population movements. However, urban management and planning have not been able to cope with these realities as cities have largely developed outside the realm of formal planning provisions, thereby overwhelming governments' ability to provide services and opportunities (Agbola and Olurin, 1998). It is pertinent to observe, however, that contemporary literature consistently highlight land use changes resulting from urbanisation (Tali et al., 2013; Sancar et al., 2009); impacts on the environment of the fringe (Su et al., 2012); inadequacy of service provision at

the fringes (Yankson and Gough, 1999); excessive land consumption due to under-valuation of open space, (Carruthers and Ulfarsson, 2002). However, the forces which motivate the responses made in the fringe area to urban expansion and how urban management systems can respond to the challenges appear to have received little attention from planners and social scientists. Unlike the urbanisation experience of developed countries, urban development and growth in Nigeria is proceeding in a different cultural and socio-economic milieu (NITP, 2014). This seems to suggest that urban planning and management in Nigeria are need of innovations.

The rapid urbanisation of Lokoja has led to new development and expansion of the urban area into the hitherto village settlements at the fringe. The consequence of rapid urbanisation is the conversion of large tracts of land, previously used for agriculture to urban uses. The changes have intensified and are increasingly threatening the sustainability of the environment. It is in the light of this that this paper examines the opportunities and challenges of urban expansion on the fringe of Lokoja, Nigeria. This has become necessary in view of the fact that urbanisation will continue to be the trend for the future. The paper is guided by the following question; what are the opportunities and challenges of rapid urbanisation in urban fringe area? What are the measures to be put in place for the management of the fringe area?

Study area

Lokoja, the capital of Kogi State is located on latitude 7°45'N-7°51'N and longitude 6°41'E-6°45'E and lies at an altitude of 45 to 125 metres above sea level. It is situated on the western bank of the River Niger close to its confluence with River Benue and sandwiched between the River and the Mount Patti (Figure 1). The town straddles strategic roads and is a gateway to five geopolitical zones out of the six such zones in the country. Being the commercial nerve centre of the region, it plays a prominent role with its markets. The town is characterized by tropical climate that comprises of wet and dry seasons and falls within the Guinea Savannah vegetation belt. The annual rainfall is about 1150 mm, with mean annual temperature of about 27.7°C. The terrain of the region comprises of dissected undulating plains on the one hand, and lofty hill masses on the other. Mount Patti is the dominant physical feature of the town coupled with a number of intermittent valleys and streams criss-crossing the breadth of the town. Modern Lokoja was founded in 1857 (The Grapic, 2016), but its fame surged when it became the capital of the British Northern Protectorate and then capital of Nigeria in 1914 after the amalgamation of Northern and Southern Protectorates. It was formerly the capital of Kabba Province, then, a Divisional and Local Government headquarter in Kwara

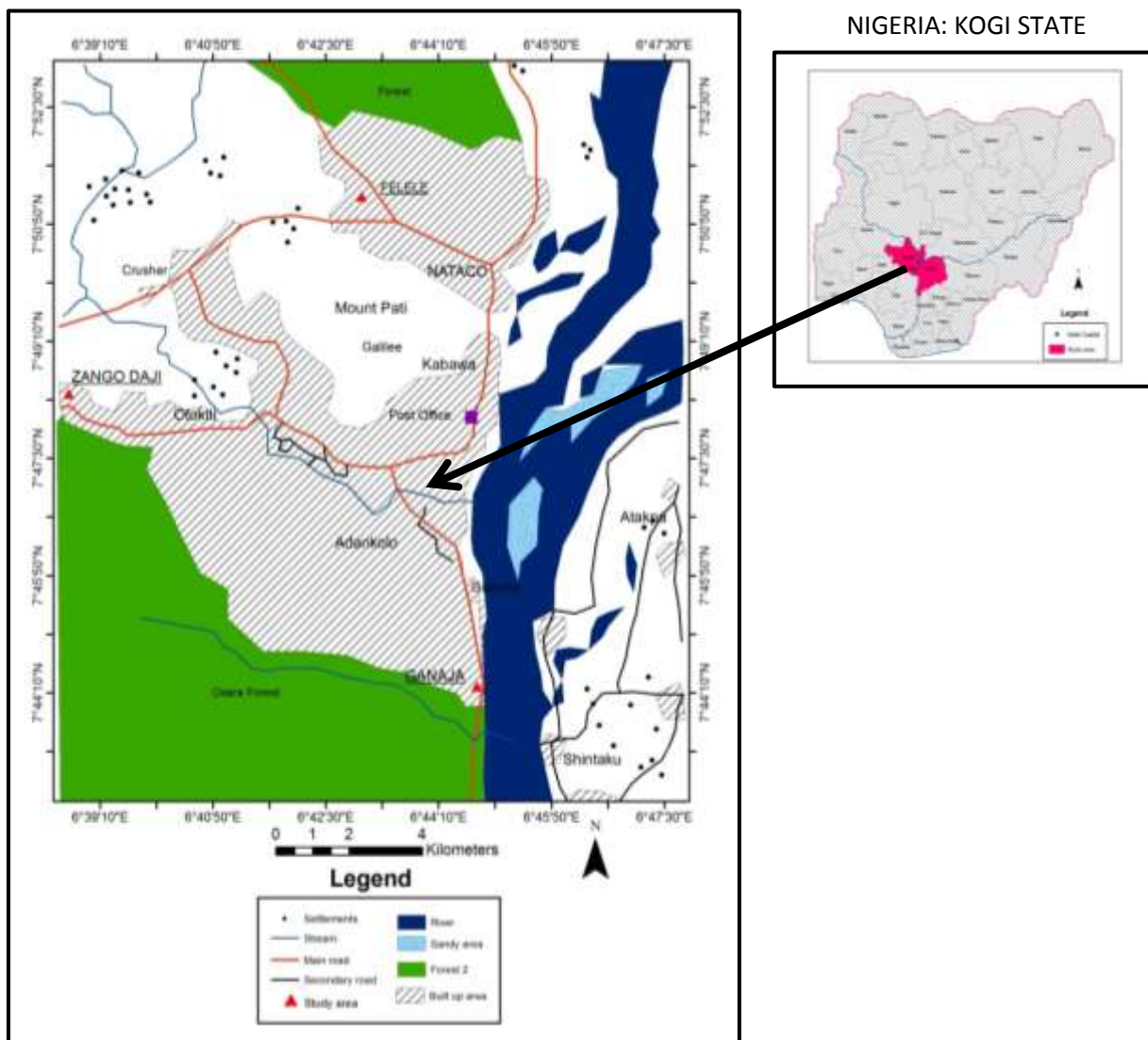


Figure 1. Lokoja: Study Area; Source: Adopted and Modified from Lokoja Topographic Map, Sheet 247, (2008).

State until 27th August, 1991 when it became the state capital of Kogi State. The administrative functions and strategic location have somehow encouraged immigration and accelerated the urbanisation process and the geographical expansion of the town. People, particularly, the youth migrates into Lokoja in search of jobs and other opportunities. The various groups of migrants were mostly civil servants that were deployed to the new state. Then other professionals and artisans also moved in order to render services for the people. In 1991, the town had 77,519 inhabitants, which increased to 196,643 in 2006(FGN, 2007). Based on a growth rate of 3.03% per annum, the population of the town was projected to reach 246,101 in 2014 (Ukoje et al., 2014).

The actual urban area of Lokoja is defined by “The land use (designation of Lokoja Metropolitan Area) order of

2nd October, 1991”. This makes all parcels of land within an 16 km radius of a circle around the Lokoja General Post Office within the geographical coordinates of approximately 07°48' 05"N, 06°44' 39"E to be part of the planning area of Lokoja Metropolitan Area. The planning area therefore encompasses portions of five Local Government Areas (LGA(s)) which include Lokoja LGA (Lokoja township, Kogi LGA (North East) Adavi LGA (South West) Ajaokuta LGA (South) and Bassa LGA (East). These areas include Lokoja as well as several small size localities within the 16 km radius (Figure 2). Despite this declaration, planning has been concentrated on the Lokoja Township alone to the neglect of other areas. However, there is rapid development going on at the peri-urban and other parts of the Metropolis where land is relatively cheaper than the Township. At the same

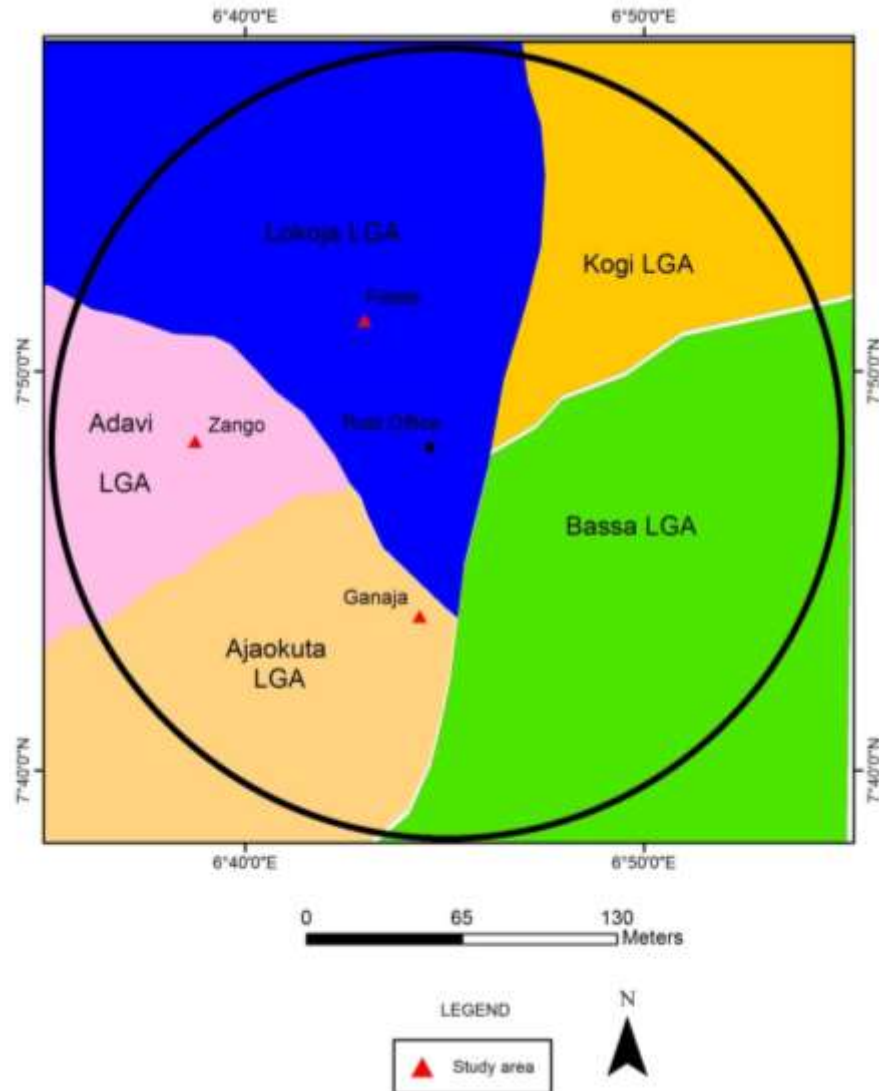


Figure 2. Lokoja Metropolitan Area; Source: Ministry of Lands, Housing and Urban Development, Kogi State.

time there is a movement of tenants to the periphery in search of cheaper accommodation. Thus, existing structures in the settlements are being expanded and transformed resulting in increasing densification within the periphery.

Physical development has exploded in the fringe zone, where new residential neighbourhoods are being developed, around settlements in Ganaja, Felele, Zango. Land which were under forest and agricultural purposes before the creation of Kogi State in 1991, have now been almost completely taken by physical structures. The net flow of population and expansion in Lokoja like other urban areas of Nigeria have not been accompanied by a corresponding supply of adequate houses, basic amenities and infrastructures (Osuide and Damina, 2005; Onibokun, 2004; Stren and White, 1989). The demand for

low cost housing and social amenities such as roads, waste disposal sites, water as well as landed property has noticed an exponential increase since the 1990s. Land administration in Lokoja like other urban areas in Nigeria is complex, as both the statutory and customary land tenure systems shape the use of land (NITP, 2014). There is no coordination in land administration between the state and the local government levels. While the ministry of lands, housing and urban development formulates plans and allocates lands for physical development in the main town, local chiefs and land owners are increasingly selling plots of land in the fringe areas to non-indigenes mainly for building purposes. The acquisition of such land is usually easy, unlike the complicated, expensive, bureaucratic and time consuming land title acquisition of the formal process. These

communities lack the capacity to undertake strict control of development.

Thus, various forms of housing development, inaccessible to vehicular transport and lacking in services and facilities have emerged at the periphery, leading to a situation of urban sprawl and an overall deterioration of the environment. Lokoja like other cities in Nigeria does not have a strong tradition of effective control of physical development of its urban areas (Okunlola, 2010). Physical planning activities are restricted to few towns and only in the area where the elites lives. Beyond GRA, the town of Lokoja is developing in a disorderly manner creating a fragmented urban structure and a totally uncontrolled urban development pattern (Ukoje, et al., 2014). It has not been able to prevent undesirable development. This pattern of uncontrolled urban development manifests seriously in fringe area due to lack of planning and effective development control measures.

METHODOLOGY

Data for this study were derived from primary sources. The data were obtained through questionnaire administration and Google map. Two sets of questionnaire schedules; one for house owners, and the other for residents who do not own houses were utilised for this study. Data collection was undertaken by the author between March and April 2016. Purposive sampling of landlords was adopted for the administration of the questionnaire in three peri-urban areas of Lokoja (Ganaja, Felele and Zango) where conversion of rural land to urban use is noticeable. In each selected compound, a landlord was interviewed while compounds that do not have the landlord living in them were left out. The questionnaire addressed issues such as motivation for location and development at the fringe, approval for development, physical infrastructure and facilities available in the neighbourhood, and environmental problems associated with the area. The other questionnaire was administered to a random set of residents to determine the livelihood opportunities available and engaged in. The questionnaire targeted issues related to location and reasons for residing in the fringe, livelihood activities engaged in, income from the activities and the challenges encountered. A total of fifty house owners and forty five residents were interviewed using the different sets of questionnaires. Data for the growth in settlement and change in land use between 2000 and 2016 were sourced from Google map.

The statistical analysis of the questionnaire utilised percentages and frequency distribution. The remotely sensed data from Google map was digitised to analyse the changes in land use in the peri-urban areas.

RESULTS AND DISCUSSION

This section presents and discusses the result of data obtained from the field survey.

Land Sale and Settlement Growth

Land in the rural-urban fringe is cheaper when compared with land prices of the same quality and size in a more

urban setting. At the same time landholders at the urban fringe are getting more money from the sale of such land than the rural counterparts. This is advantageous to the landholders who have sold some or whole portions of land and used the proceeds to buy bigger ones in the further rural distances. For instance, 30 m by 30 m (900 square metres) standard plot of land in the fringe areas were sold for ₦250,000. While this is relatively expensive when compared to a similar land in the further rural areas which sold for ₦45,000, they are attractive to urban dwellers who regard them as cheap considering that such land sold for between ₦800,000 and ₦1,000,000 in already urbanised areas of the town. Nearly all the landholding families have sold up their farmland to developers. However, some of the landholders are using the proceeds from land sales to construct rental residential accommodation in the remaining portions of land.

Rapid urbanisation of the rural-urban fringe, have brought about conversion of lands which were hitherto under farmland and forestry to residential use. By the year 2000, 2% of the land in the study area was under settlement; 36% was under forest, while 61% was under farmland (Table 1). The change was steady, such that by 2008, 39percent of the land was already built-up while forest and farmland had decreased to 10percent and 32percent respectively. By 2016, 17% of the land is pockets of farmland, while the built-up area accounted for 83%, representing an increase of 80%. The forest has disappeared altogether.

Responses and Motivation of Fringe Dwellers to Urban Expansion

One of the responses to urbanisation of the fringe area is transformation of housing. Within the villages close to the built-up area, there has been an appreciable amount of transformation of the housing stock (Table 2). The transformation are, in the form of some households rebuilding their houses with more permanent building materials, for example, cement block wall replacing mud wall and the extension of compounds or new housing altogether. From the table, 32% of the respondents have transformed their houses by rebuilding with more permanent building materials. Analysis of data shows that 8% of landlords have extended their house through addition of rooms, or conversion of parts the house, to provide additional space for household members or rental accommodation. The majority of the respondents, (60%) have constructed new houses, particularly in acquired lands by people who have moved from the congested core areas of the main urban centres. The new housing construction increased in tempo following the flooding of 2012. At the moment, 60% of the residents of Ganaja fringe moved from Adankolo and Gadumo-the two areas most ravaged by the flooding of 2012.

All the new constructions and extensions are private

Table 1. Land use change at the urban fringe between 2000 and 2016.

| Land use | Percentage of land under various uses | | | |
|-----------|---------------------------------------|------|------|------------------|
| | 2000 | 2008 | 2016 | Change 2000-2016 |
| Built-up | 3 | 39 | 83 | 80 |
| Forest | 36 | 10 | - | -36 |
| Farm land | 61 | 32 | 17 | -44 |

Source: Field survey, 2016.

Table 2. Form of transformation of the housing stock.

| Form of transformation | Number | Percentage |
|--|--------|------------|
| Rebuilding of houses with permanent building materials | 16 | 32 |
| Extension of compound to accommodate more people | 4 | 8 |
| New housing construction | 30 | 60 |

Source: Field survey, 2016.

Table 3. Type of housing and location within compound.

| Type of House | Location within compound | | |
|-------------------|--------------------------|------|-------|
| | Side | Back | Front |
| Bungalow | - | - | 8 |
| One room detached | 4 | 11 | - |
| Two room detached | 5 | 7 | - |
| Row | 5 | 10 | - |

Source: Field Survey, 2016.

rental accommodations. Nearly 70% of the houses largely consist of one or two rooms detached houses erected anywhere within the compound (Table 3). Most of the rental structures are rows or detached buildings by the sides or back while the plot owners' dwellings are bungalows which are located at the front in the compounds. The rental accommodations generate a lot of impacts, both for the landlords and renters. All the landlords agreed that rental rooms represent capital investments as it generates regular income and helps to supplement salary earnings. For renters, especially low income households, the houses are affordable compared to similar houses at main urban area. Beside the income derivable and affordability of the houses, housing transformation and extension, and rental rooms has had many benefits to communities of the fringe areas. First, it provides working space for home-based enterprises such as shops, salons, carpentry, poultry, and laundry and telephone services. The majority of tenants and some landlords conduct most of their work and earn their livelihood from the home-based enterprises in the fringes. Second, it has increased the housing stock in Lokoja judging by the densification and the extension of the area

of fringe settlements. Third, addition of more rooms enables house owners to create more space for food preparation and sleeping.

The Impacts of Growth on the Environment

Uncontrolled Development

None of the fringe areas has a development plan, yet residential plots were allocated by the local chiefs who sell out land without any improvement in the form of provision of community facilities. Most of the houses were constructed without planning approval or permit. Of the fifty respondents for this study, only 38% got development permits. The remaining 62% who did not get permits saw no reason to do so, a sign of lack of awareness or lack of measures to compel them to do so. Apart from the unauthorised construction, there have been developments, which though legally authorised, are unplanned and disorderly. The reasons for this can be traced to a number of factors, such as, inadequacy of development control rules, absence of proper authority to enforce development



Figure 3. One of the bad patches on the main access to Felele fringe; (Photo by the author's fieldwork, 2016).

control rules and lack of monitoring of the development. This made Bentinck (2000) to describe such area as an administrative twilight zone. The Town Planning Board, the local government councils and communities execute various responsibilities in the fringe areas of Lokoja; but which are not structured to handle the challenges of urbanisation. This condition gives room for informal process of land use development to thrive as government level actors lack the capacity to execute its mandates. Uncontrolled development has led to haphazard development and excessive densification of plot area in the fringe areas.

Just like Thuo (2013) reported in Kenya, the rapid urbanisation in Lokoja does not correspond with the availability of infrastructural facilities and social amenities. The fringes lack adequate service lines and in most cases there is no road setbacks as most of the houses lack direct access. The road networks were not designed and remained unorganised with some so narrow that cannot accommodate two vehicles. Since the fringes were not planned, houses were erected anyhow, blocking access to many houses. The only access to a section of Felele fringe area is narrow and unpaved with bad patches that vehicles have to crawl through badly eroded parts to get to their destination (Figure 3). These areas also lack other facilities such as markets, recreational spaces and other social centres to which the residents can relate with. Other than uncontrolled land subdivision resulting into residential development without services and infrastructure, there is no continuity in the built-up area. The haphazard manner and scattered development on the landscape manifests as a sprawl. The cluster of dense houses is separated by agricultural land which is

still under cultivation. According to Thuo (2013), this kind of residential land use development is most costly in respect to providing services and facilities due to distances between cluster of houses. Dispersed residential land use also cause unnecessary land consumption because, uncoordinated land use will, once the area becomes dense, leave agriculturally unusable fragmented open spaces. This fragmented space is associated with problems of domestic waste disposal. Towards the edge, however, there are patches of residential land use developments interspersed with small farming activities.

Environmental problems

With the subdivision and conversion of agricultural land for residential use, and increasing urbanisation, there arise environmental problems that are associated with the ways in which the environment has been used as a source or means of disposal of services.

Source of water supply

Easily accessible, potable, water supply is a prerequisite to good hygiene and sanitation, and hence, the general welfare of households. In the past when the land was under farming, streams and ponds were used for water supply. But with increasing urbanisation, these sources have been polluted with wastes and other discharges and thus, are not potable for human consumption. Though much of the urban areas should be supplied with pipe



Figure 4. Open space used as Garbage dumpsite in Felele; (Photo by the author's fieldwork, 2016).

borne water, in reality, this supply is very poor in some areas, and practically not available in others. In Ganaja, 23 households interviewed obtained their water from a tap which are either for the exclusive use of the family or shared with others from a stand pipe in the compound. Two have additional supply from well or borehole while one use well water only due to inability to afford the connection to the distribution main. The frequency of water supply and pressure is low that the volume delivered is not adequate. Interestingly, those connected to the urban water works end up using alternative sources of water supply from the well, boreholes or streams. In Zango and Felele, borehole is the main source of water supply for the entire households, supplemented by well water. A large percentage of the residents who could not provide borehole in their compounds (30%) buy potable water from other compounds at the rate of ₦10 per bucket. Households in these areas paid a remarkable amount on a monthly basis for water. Being more expensive to pay for water by the bucket than the metered piped water, residents complained about the high cost of water. As Lee and Anas (1990) discovered, poor households end up paying the highest price for water when urban services are inadequately provided by the public sector.

Solid waste disposal

As areas become increasingly urbanised, an efficient system of solid waste disposal is, therefore, essential for the maintenance of a healthy urban environment. However, in Lokoja, there is no coordination in the way solid waste is managed within the fringes. Solid waste is

most commonly dumped on open lots or fields while some burn their waste with little or no provision for protecting the environment. This is evident in the way solid waste is strewn all over the place especially on the roadside (Figure 4). From the survey, 64% throw their waste on empty lots and fields, especially on undeveloped plots, while 34% burn their waste. Only 2% of the respondents indicated to engaging private collectors for its waste. This waste provides breeding grounds for diseases pathogens and pests which are potentially harmful to public health. The waste contains papers, plastics and polythene which have created eyesore in most parts of the areas. These polythene wastes block drainages and river channels, thus, causing flooding by storm water when it rains. Edges of the settlements are littered with non-biodegradable waste, which constitutes eyesore and potential health hazard to the residents.

Liquid waste disposal

While the bush may be adequate for the disposal of human waste in rural areas, it becomes very unhygienic and inadequate as areas becomes increasingly urbanised. Hygienic disposal of human waste is essential to the maintenance of public and quality environment as in all of Lokoja; none of the houses in the urban fringes have a sewerage system. Though the majority of inhabitants in the fringe areas (67%) have flush toilets that empty into septic tanks in the compound, 26% though, still depend on pit latrines and a few (6%) use free range system. Despite the use of septic tanks, most waste from laundry, body and utensil washing are usually



Figure 5. Sewage Water diverted from Houses onto Nyamanyama Road in Ganaja; (Photo by the author's fieldwork, 2016).

thrown on the ground. This waste flows in poorly constructed or maintained drainage channels or on open plots leaving it stagnant for a long period of time. Some of the households channelled their waste onto a road side ditch or forms its own pool on streets (Figure 5). Stagnant pools of waste water often result to become breeding ground for mosquitoes and other organisms (Simon, 2008), and leave unpleasant odour. In addition, with the prevalence of pit latrines and shallow well supplying domestic water to the majority of the residents, there is a general perception among most of the residents of high exposure to health risk.

CONCLUSION AND RECOMMENDATION

The results of this paper indicate that rapid expansion of urbanisation is leading to transformations in the fringe area. Although, these transformations are generating opportunities for residents, there are negative impacts manifesting on the environment. Housing transformation and new construction has enabled landlords to obtain sustainable sources of income while providing cheap and affordable housing to low income migrants working inside Lokoja. Housing transformation has positive outcomes and deserves full support by policy makers and city managers. Despite the positive contribution to housing delivery, extensions and transformation to housing have

increased housing densities (overcrowding), thus, promoting ill-health and compromising building regulations, standards and development control codes. The sale of land has led to conversion of agricultural land to settlement in the Lokoja rural-urban fringe. But the unplanned nature of residential development results in a sprawl, negating the principle of sustainability. The consequences of sprawling land development have been an encroachment of residential uses into an agricultural-oriented rural area that is not prepared for urbanisation.

Furthermore, the residential developments are not backed with corresponding investment in physical infrastructure such as roads, water supply, sewerage systems and other public utilities. As a result of the lack of investment in these infrastructures and services, these residential developments are generating environment problems such as soil erosion, waste littering, pollution of the environment and poor access to housing areas. Urbanisation will continue to be one of the defining trends of our future. However, for cities to promote sustainable development and redress the problems associated with rapid urbanisation, it is recommended that necessary attention be paid to urban planning. There is urgent need for Integrated Urban Plan, which will incorporate social, economic and environmental concerns and link the needs of peripheral areas with those of the urban centre. There is need to restructure the administrative and management systems of urban areas to accommodate

and coordinate the customary land tenure systems so as to balance all the interests within the city, and deliver titled urban land that is adequately linked with infrastructure and services.

Conflict of interests

The author has not declared any conflict of interest.

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